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MIMO Control Loop using Multipletanks System to Control the Level using LabView

B. Kalaiselvi, D. Sridharraja, T. Vijayan

Abstract*: The modernisation of the current arrangement of information securing framework in procedure control is moved up to the ongoing innovations for running the procedure station. This paper gives the perspectives on the current 3 tank frameworks set up is utilized for controlling the degrees of 2 associating frameworks. Fluid level control has a huge application area in industry move over; the three tank framework is one of the most broadly utilized examinations in lab and research organizations. The estimation of modern procedure level parameter is one of the extraordinary significances in procedure control. The degree of fluids may influence both the weight and pace of stream all through the tank. Thus, the quality might be influenced. Programmed control applications will require control signals for activity of incitation. Level transmitter is utilized to gauge level of the tank. In this framework the level in the process tank is detected utilizing a level transmitter and the comparing current yield being estimated and constrained by utilizing information obtaining framework. [1],[3],[5]

***Keywords* : Closed loop, Cascade control, LabView, Virtual Instrumentation**

I. INTRODUCTION

Mechanical control frameworks are utilized in gear or hardware for modern productionor control.Two kinds of control frameworks arecommon, open circle control frameworks and shut circle control systems.There are two normal classes of control framework, open circle control frameworks and shut circle control frameworks. In open circle control system yield is made subject to data sources. In shut circle control structures current yield is considered and corrections are made reliant on analysis. [2],[4],[6]

A shut circle framework is additionally called a criticism control framework. Strategy control is the exhibit of controlling a last controller part to change the controlled variable to keep up the methodology variable at a perfect set point .The controlled variable is an extent of advantage being supported into the technique. Last control component is the gadget that changes the estimation of the controlled variable. The controller yield is the sign from the controller to the last control component. The procedure variable is the proportion of the procedure yield that adjustments because of changes in the controlled variable. The set point is the incentive at which we wish to keep up the procedure variable

II. PROPOSED EXPERIMENTAL SYSTEM

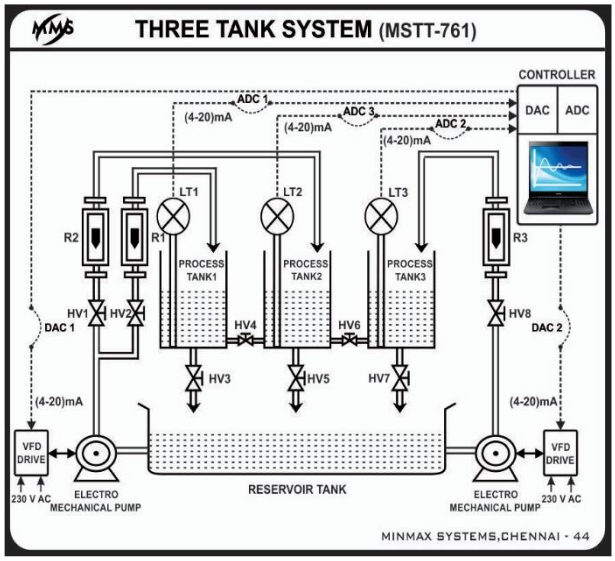

Figure.1Proposed system in real time

This the experimental system used the Closed loop block diagram is shown in the Labview screen developed according to the proposed system. In cascade there are two loops one the master whose set point does not changes so often whereas the output of the master loop is going to be the set point of the slave loop hence the designing of slave loop controller plays a vital role in bringing the two tanks to the required set point. DAQ: The data acquisition system which acquires all the data from the real time three tank process station which is used to interface all the analog inputs from the real time process and processed by the controller designed for the stability of the proposed system and the controller output is given to the final control element through DAC and the current to pressure converter. [7],[9] ,[11]

Cascade Control: The cascade analyser block diagram is designed as shown in the figure; the cascade control is basically have primary and secondary loops whose controller are master and slave controller. Master's set point does not vary rapidly where as the slave set point varies rapidly. In spite of variations in the set point the controller design is a tedious process. [8],[10] ,[12]

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***** Correspondence Author (s)
B.Kalaiselvi, Department of EIE, Bharath Institute of Higher education and research, Tamilnadu, India. Email: kalaiselvi.eie@bharathuniv.ac.in
Sridhar Raja D Department of EIE, Bharath Institute of Higher Education and Research, Tamilnadu, India. Email: sridharraja.eie@bharathuniv.ac.in
T.Vijayan, Department of EIE,Bharath Institute of Higher education and research, Tamilnadu, India. Email: vijayan.eie@bharathuniv.ac.in

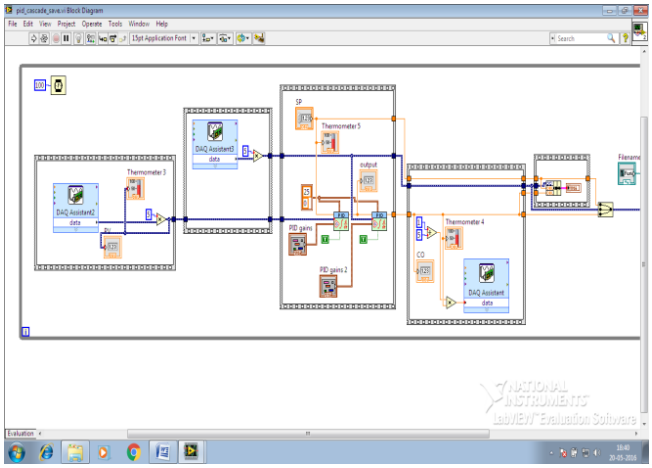

Figure2. Schematic of Cascade control system

After building the block diagram in LabView the continuously run operation is chosen in the file menu. The Cascade connection can be viewed from the Labview window panel as shown in fig 3. [13], [15] ,[17]

The final Control element is the pneumatic control valve. This control valve is controlled by the manipulated variable given from the controller via current to pressure converter. [14],[16], [18]

III. RESULTS AND DISCUSSIONS

The process data is tabulated using Excel format and the process running window also shows the level of the two tanks virtually also as shown in the figure.

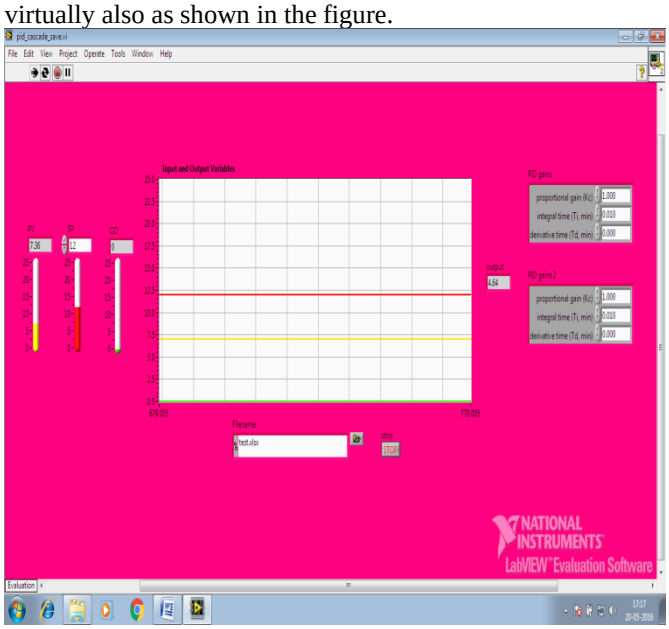

Figure.3Window in virtual set up using LabView

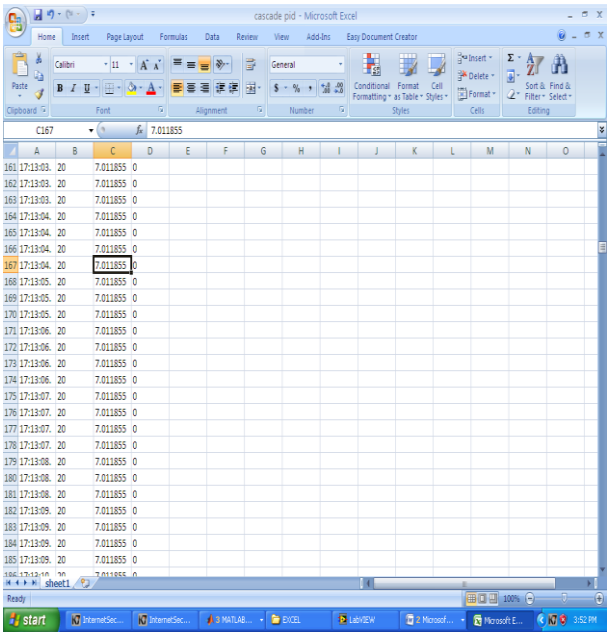

Figure 4 Excel Data format for the cascade Control System

IV. DISCUSSIONS

Hereby we can conclude that the existing systems with convention methodologies and programming languages can be replaced with trending software's and technologies by just comparing and applying the algorithms of related process control. [19],[20],[21]

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AUTHORS PROFILE

B.Kalaiselvi, Assistant Professor, Department of EIE,Bharath Institute of Higher education and research, Tamilnadu, India

Sridhar raja D, Assistant Professor, Department of EIE,Bharath Institute of Higher education and research, Tamilnadu, India.

T.Vijayan, Assistant Professor, Department of EIE,Bharath Institute of Higher education and research, Tamilnadu, India.